

# PATENT COOPERATION TREATY

7N/sug 1-2

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

## PCT

WRITTEN OPINION

(PCT Rule 66)



To:

**OKABE MASAO**

**NO.602, FUJI BLDG. 2-3,  
MARUNOUCHI 3-CHOME  
CHIYODA-KU TOKYO 100-0005  
JAPAN**

Date of mailing  
(day/month/year)

**02.11.2004**

Applicant's or agent's file reference

**CFO17636WO**

**REPLY DUE**

within **2 months** from  
the above date of mailing

International application No.

**PCT/JP 03/13074**

International filing date (day/month/year)

**10.10.2003**

Priority date (day/month/year)

**16.10.2002**

International Patent Classification (IPC) or both national classification and IPC

Int.Cl.<sup>7</sup> **H01L 31/04, C30B 29/06, C01B 33/02**

Applicant

**CANON KABUSHIKI KAISHA**

1. This written opinion is the 2 (first, etc.) drawn by this International Preliminary Examining Authority.

2. This opinion contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

3. The applicant is hereby invited to reply to this opinion.

**When?** See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

**How?** By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

**Also** For an additional opportunity to submit amendments, see Rule 66.4.  
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4bis.  
For an informal communication with the examiner, see Rule 66.6.

**If no reply is filed**, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is:

**16.02.2005**

Name and mailing address of the IPEA/JP

**Japan Patent Office**

3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan

Authorized officer

**Shoji HAMADA**

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**2K**

**9207**

WRITTEN OPINION

International application No.  
PCT/JP 03/13074

**I Basis of the opinion**

1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
pages 1-41, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
Nos. \_\_\_\_\_, as originally filed  
Nos. \_\_\_\_\_, as amended (together with any statement) under Article 19  
Nos. \_\_\_\_\_, filed with the demand  
Nos. 1-2, filed with the letter of 30.09.2004
- ☒ the drawings:  
sheets/figs 1/3-3/3, as originally filed  
sheets/figs \_\_\_\_\_, filed with the demand  
sheets/figs \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the written opinion was drawn on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_

5. ☐ This opinion has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed."

WRITTEN OPINION

International application No.  
PCT/JP 03/13074

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1 - 2</u>	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	<u>1 - 2</u>	NO
Industrial applicability (IA)	Claims	<u>1 - 2</u>	YES
	Claims		NO

2. Citations and explanations

D1: JP 10-98205 A (CANON KABUSHIKI KAISHA)

D2: Kishore et al, "Thin film solar cells from directionally solidified polycrystalline silicon doped with B, Al, Cu and C", Conference Record of the 19th IEEE Photovoltaic Specialists Conference, 1987, pages 1271 - 1274

Claim 1-2

D2 discloses a method of fabricating polycrystalline silicon ingots by directional solidification using electronic grade silicon and adding impurities, such as B or Al, where the electronic grade silicon, used in D1, is found to be differ from the metallurgical grade silicon, used in claims 1-2 of this application, in terms of amounts of impurities.

However, since using metallurgical grade silicon as a starting material is found to be well known in this art at the priority date of this application, as shown in D1 for an example, it is considered obvious to a skilled person to substitute metallurgical grade silicon for electronic grade silicon.

Furthermore, it is also considered obvious for him, based on the teaching regarding the relationship between the amounts of impurities, such as B or Al, and solar cell's characteristics, such as efficiency, to select appropriate amounts of those impurities, taking into account the impurities in the melting silicon as a starting material.